DOCUMENT RESUME

ED 370 531 IR 016 646

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TITLE Educational Resources on the Internet.
PUB DATE 14 Oct 93
NOTE 14p.; Paper presented at the Annual Meeting of the Mid-Western Educational Research Association (October 1993).
PUB TYPE Guides - General (050) -- Reports - Descriptive (141) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Access to Information; *Computer Networks; Computer Uses in Education; Electronic Publishing; Elementary Secondary Education; Higher Education; *Information Networks; *Telecommunications
IDENTIFIERS Electronic Journals; File Transfer Protocol; *Internet; Listservs; Telnet

ABSTRACT

The purpose of this paper is to introduce to school teachers and students resources on the Internet, and to provide updated information on selected resources. Following background information on the development of the Internet, its educational potentials are discussed, including resources for preparation of teaching materials, access for children to real-world learning resources, and uses in educational research. Internet usages in educational settings, including electronic mail, Telnet, and File Transfer Protocol (FTP) are then described. Descriptions and access information for several special interest discussion groups, electronic journals/newsletters, Telnet sites, and FTP sites are provided. (MES)

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Educational Resources on the Internet

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Paper presented at the Annual Meeting of the
Mid-Western Educational Research Association

Chicago
October 14, 1993

IR016646

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Abstract

The purpose of this paper is to introduce to school teachers and students resources on the Internet, and to provide updated information on selected resources. Internet is a global network that is continuously expanding, and there is an immense amount of information available on the network. More important to educators and students is that much Internet information has great educational and research value and is available to the public free of charge. School teachers may find resources on the Internet that may help broaden their students' learning, and educational researchers may also find Internet a useful informational resource when doing their research. This paper outlines the three major Internet usages: electronic mail, telnet, and ftp.

The Internet

The Internet is a worldwide network of computer networks. It is a huge and extensive interconnection of national and international databases. One can gain access on the Internet to a large variety of educational resources such as free educational computer software, electronic books, educational electronic journals and newsletters, education-oriented discussion groups, and educational research data.

The Internet has its origin in the effort of the U.S. Defense Department in the late sixties to design a computer networking technology that would survive catastrophic disasters such as a large-scale nuclear attack. As a result of this effort, the ARPANET was developed. The ARPANET was a network driven by a set of rules or standards known as "protocols". The concept of protocol was later extended by the National Science Foundation in the mid-eighties, and the NSFnet was consequently created. The NSFnet is a wide area network that allows high speed telecommunication links between supercomputers across the country, and it has become the backbone of the present Internet.

Today, there are over four million users in hundreds of countries throughout the world using the Internet. The Internet is rapidly growing and it should be noted that any estimate of the size of the Internet is usually valid for only a short period of time. One reason for the rapid growth of the Internet is perhaps the fact that a large number of colleges and universities throughout the world are now connected to it. In this country, Freenets (open-access, free, community computer systems) services are offered in many

communities. These Freenets services enable local residents to have free access to the Internet. Additionally, a number of commercial vendors such as CompuServ and MCI Mail offer computer communication services for a nominal subscription fee and many people would find such communication services affordable. All these university, community, and commercial supports contribute to the continuous growth of the Internet.

Educational Potentials of the Internet

School teachers can take advantage of the many free educational resources on the Internet in their teaching and in their preparation of teaching materials. For example, they may find some free computer software that would help students learn a particular concept, or they may gain insights into different ways of presenting information that would facilitate their students' learning. Discussion lists, electronic journals and newsletters may broaden a teacher's knowledge of current ideas and issues in education. Thus, it seems that one important part of teacher education curriculum nowadays is to help teacher education students get familiarized with the Internet.

To school children, access to the Internet would mean access to real-world learning resources. In effect, the Internet has created "electronically linked learning communities" in which information and ideas are exchanged and discussed (West, 1993). A student's participation in these learning communities would only expand his/her knowledge and help refine his/her thinking.

Educational researchers may find the Internet very useful to their research. First of all, the Internet makes it much easier for researchers to gather up-to-date information for their research. Also, participation in various discussion lists would foster exchanges of research ideas with peers from other universities and colleges.

Internet Usages in Educational Settings

There are three common usages of the Internet in the context of education: electronic mail, telnet, and file transfer protocol.

Electronic Mail

E-mail is perhaps the best known and the most common usage of the Internet. E-mail allows group exchanges of ideas in addition to person-to-person communications. Many special interest discussion groups or lists, and electronic journals and newsletters operate on the basis of electronic mail.

Person-to-person communications. School children can communicate on a personal basis with teachers, librarians, and peers to exchange ideas and to gather information. Personal e-mail communication is much faster when compared to "snail" mail, and one would find it very useful to be able to obtain information or advice within a short period of time.

University students and educational researchers can also exchange ideas on a personal basis using e-mail. It should be noted that some graduate students do make use

of e-mail to communicate personally with renowned scholars from other universities for advice.

Special interest discussion groups. Discussion groups are also known as discussion lists. The name "discussion list" is derived from the term "e-mail list". There are many existing discussion groups in different areas of interests. These electronic discussion groups allow participants to debate ideas and exchange information. Since the Internet is a global network, all discussion lists are international.

Special interest discussion lists are either moderated or unmoderated. In a moderated list, submitted messages are reviewed, selected, edited, and distributed daily (or at some set time intervals) by some moderator(s). In an unmoderated list, all messages received are automatically distributed to all participants of the list.

Below are some selected discussion lists that many school teachers and students may find interesting and helpful:

KIDSNET@PITTVMS

KidsNet is a discussion list developed for K-12 students, teachers and other individuals interested in technological development and international communications. To subscribe to this discussion list, prepare a subscription request message containing the line "sub kidsnet your_name". Bitnet users can send the subscription request message to JOINKIDS@PITTVMS. Internet users can send the message to KIDSNET-REQUEST@VMS.CIS.PITT.EDU

EDTECH@OHSTVM

EdTech is a discussion list for teachers, educators, students, and other individuals interested in sharing ideas and information about educational technology. Subscription requests can be e-mailed to LISTSERV@OHSTVMA (Bitnet) or LISTSERV@OHSTVMA.ACS.OHIO-STATE.EDU (Internet).

ACADV@NDSUVM1

ACADV–Academic Advising Forum–is a discussion list developed primarily for faculty and professional advisors in higher education who are involved in providing academic advising services. Subscription requests can be e-mailed to LISTSERV@NDSUVM1 (Bitnet), or LISTSERV@VM1.NODAK.EDU (Internet).

STLHE-L@UNBVM1

This discussion list is maintained by the Society of Teaching and Learning in Higher Education (STLHE) in Canada. The purpose of the list is to provide an electronic forum for educators and professionals interested in teaching and learning in higher education. The list is also used as an electronic bulletin board for STLHE. Subscription requests can be e-mailed to LISTSERV@UNBVM1 (Bitnet) or LISTSERV%UNB.CA@CORNELLC.CCS.CORNELL.EDU (Internet).

TAG-L@NDSUVM1

TAG-L (Talented and Gifted Education List) is open to any individuals interested in exchanges of ideas and information related to education for the talented and

the gifted. Subscription requests can be e-mailed to LISTSERV@NDSUVM1 (Bitnet), or LISTSERV@VM1.NODAK.EDU (Internet).

People who are interested in getting more information about discussion lists can consult the *SRI International List-of-Lists*. The electronic version of the *SRI International List-of-Lists* can be obtained via anonymous FTP on ftp.nisc.sri.com. The name of the file is **interest-groups** in the **netinfo** subdirectory.

Electronic journals/newsletters. Like discussion lists, electronic journals and newsletters operate on the basis of e-mail. Authors first submit their articles to an electronic journal via e-mail. Authors and reviewers then use e-mail to exchange ideas and comments. Finally, the edited articles are e-mailed to all subscribers.

Electronic journals and newsletters are becoming more and more popular. The increasing popularity of electronic journals is probably due to the advantages of e-mail. First, e-mail allows faster exchanges of ideas between authors and reviewers. The review process is therefore faster, and subsequently, articles are more timely and contain more up-to-date information. A second advantage is the fact that one can subscribe to the majority of electronic journals without paying any subscription fee, as long as one has access to e-mail. Finally, the Internet enables easy and fast retrieval of published issues of electronic journals.

Below are some examples of electronic journals in education:

DISTED

DISTED is an online version of the *Journal of Distance Education and Communication*. It publishes articles that cover a wide range of areas related to

distance education, including both formal and informal distance education for K-12 and college students. Subscription requests can be e-mailed to LISTSERV@UWAVM.BITNET

EDUPAGE

This is a news update from EDUCOM, an organization of universities and colleges committed to promoting the use of technology in education. EDUPAGE is a bi-weekly newsletter that summarizes recent news related to information technology. Subscription requests can be e-mailed to EDUPAGE@EDUCOM.EDU

HORIZONS

This is the *New Horizons In Adult Educational Journal* that can be obtained by first joining the AEDNET–The Adult Education Network. Requests to join the AEDNET should be e-mailed to LISTSERV@ALPHA.ACAST.NOVA.EDU. Once on the AEDNET discussion list, one can get issues of the journal by sending "index" and "get" messages to LISTSERV@ALPHA.ACAST.NOVA.EDU

For a comprehensive list of electronic journals and newsletters, one can consult the *Directory of Electronic Journals and Newsletters* compiled by Michael Strangelove at the University of Ottawa. The directory can be obtained by sending an e-mail message to Comserve@Rpiecs (Bitnet) or Comserve@Vm.Ecs.Rpi.Edu (Internet) with the following command appearing on the first line of the message:

Send EJournl1 Sources

Send EJournl2 Sources

Telnet

Essentially, telnet is a remote login command. Using telnet, one can reach hundreds of library catalogs and special Internet sites to obtain different kinds of specialized information such as space exploration information from NASA (SPACELINK.MSFC.NASA.GOV). Telnet enable students, teachers, and educational researchers to go beyond their local library and have access to global information resources without physically travelling to another town or country.

Below are some examples of Telnet sites:

FEDIX.FIE.COM

The login name for this site **fedix**. This telnet site provides online information about educational research and services of the U.S. Federal Government. Information on federal grants and fellowships is also included.

INFO.RUTGERS.EDU

No login name is required to log onto this telnet site managed by the Rutgers University Campus Information Network. This site provides access to weather, world news, electronic dictionary and thesaurus.

FORSYTHETN.STANFORD.EDU

This Stanford University telnet site provides access to a 2700-citation Martin Luther King Jr. Bibliography. Enter **socrates** at the "Account?" prompt, then enter VT100 for terminal type, and finally, enter **select mlk** at the "Response:" prompt.

TCFORUM.UNL.EDU

This site is operated by the Teachers College of the University of Nebraska at Lincoln. There is an educational software review section that may be of interest to many students and educators. In addition, some computer software can be downloaded from this site.

It should be noted that there are more convenient ways of telnetting to various sites. Two popular ways are using Gopher and Hytelnet. Both Gopher and Hytelnet offer menus for a user to choose from, and automatically telnet to the selected site for the user. Furthermore, using Gopher and Hytelnet essentially means using the most up-to-date and comprehensive list of telnet sites available.

File Transfer Protocol

File Transfer Protocol–FTP–enables Internet users to log onto another computer on the Internet and transfer files to or from the other computer. There are many Internet sites that can be accessed via anonymous FTP. Anonymous FTP allows any individual to login as a guest without the need of applying for a particular account and password, and then copy files from the site.

Many anonymous FTP sites allow users to copy freeware such as computer-assisted instructional software, electronic books, maps, or graphics. Anonymous FTP can therefore be very useful to teachers who would like to gather instructional materials of various formats.

Below are some selective anonymous FTP sites:

MICROS.HENSA.AC.UK

This site provides access to a huge collection of free computer software for IBM-PC's as well as for Macintoshes.

DENEVA.SDD.TRW.COM

This is the anonymous FTP site for the Project Gutenburg. It allows users to copy free full-text electronic books in history, poetry, religion, and children's literature.

HYDRA.UWO.CA

Library media specialists working in public schools may find this site useful to collect free library and educational software.

A comprehensive list of anonymous FTP sites can be obtained by telnetting to PILOT.NJIN.NET. However, it should be remembered that there are tools such as Archie that allow users to go to various anonymous FTP sites. These FTP tools essentially provide the most comprehensive and up-to-date list of anonymous FTP sites.

Concluding Remarks

Many educators and library professionals believe that within ten years, the Internet would become the largest information resource in human history. How true and valid this belief is remains to be seen. However, for the time being, it is undoubtedly true that the Internet has become an increasingly important information resource. In the context of education, the Internet has helped create many electronically linked learning communities of researchers, teachers, and students of different nationalities and cultural

backgrounds. These learning communities do promote information sharing and learning, and familiarity with the Internet would only tremendously help students, teachers, and researchers in their quests of knowledge.

Reference

West, P. (January, 1993). The mother of all networks. *Teacher Magazine*, 19-22.